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10/568,706

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EXAMINER

CHEN, KEATH T

ART UNIT

PAPER NUMBER

1792

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09/29/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/568,706	<b>Applicant(s)</b> OHMI ET AL.	
	<b>Examiner</b> KEATH T. CHEN	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 34-43 is/are pending in the application.
- 4a) Of the above claim(s) 42 and 43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 34-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

1. The claim amendment filed on 09/02/2009, addressing rejection of claims 34-41 from the non-final office action (03/04/2009), by amending claims 34 and 37 is acknowledged and will be addressed below. The examiner notices that the amendment was made without citing support.

### ***Election/Restrictions***

2. Claims 42-43 remain withdrawn from consideration as being directed to a non-elected invention. There is no allowable generic or linking claim. See 37 CFR 1.142(b) and MPEP § 821.03.

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. **Claims 34, 35, 37, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips et al. (US 4889319, hereafter '319), further in view of Yoshiro et al. (English translation of JP2002-310302, hereafter '302), Horsky et al. (US 20030230986, hereafter '986), and Yamazaki (US 20020132047, hereafter '047). (US 20070037922 and 3114778 are cited for definition of perfluoroelastomer.)**

'319 teaches some limitations of:

Claim 34: A vapor deposition apparatus (Fig. 4) for use in depositing an organic EL layer (is capable of), the vapor deposition apparatus comprising: a process chamber (#36, deposition chamber, col. 7, lines 3-4) for carrying out

vapor deposition on a substrate (semiconductor processing, col. 6, lines 65-68); a substrate introducing chamber (preparation chamber #33, col. 7, line 1) connected to the process chamber through a gate valve (#54, bakeable gate valve, col. 7, lines 23-25); a substrate introducing door (#50, col. 7, line 20) connected to the substrate introducing chamber; a deposition source chamber (Fig. 4, #38 and #43, Knudsen cells, col. 7, lines 4-5) connected to the process chamber and having a deposition source container (Knudsen cell is a container); a shutter mechanism (col. 7, line 14-15) between the deposition source chamber (Knudsen cell #38/#43 or later named #105) and the process chamber (#36); a first primary pump (#47, col. 7, lines 8-9) connected to the process chamber through a pump gate valve (#56, col. 7, lines 23-24); a first gasket (#69 or #83, see Fig. 5, col. 7, line 36 and 57), placed between the substrate introducing door (#50) and the substrate introducing chamber (#33); a second gasket (#92, O-ring of gate valve for #54, see Fig. 6 or 7) placed between the substrate introducing chamber and the process chamber; a third gasket (#92, O-ring of gate valve for #56, see Fig. 6 or 7) placed between the first primary pump and the process chamber.

Applicant's claim requirement "the deposition source container accommodates an organic material for the organic EL layer" is considered intended use in the pending apparatus claims because the material used is not part of the apparatus. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (*Walter*, 618 F.2d at 769, 205 USPQ at 409; MPEP 2106).

Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (*In re Casey*, 152 USPQ 235 (CCPA 1967); *In re Otto*, 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02). When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (*In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

'319 further teaches that conventional vacuum systems have all-metal seals (col. 1, lines 58-62) including gasket for exhaust means; seals of various forms is required in doors at sample entry ports (col. 2, lines 9-11 ) because the frequency of open/close (col. 2, lines 30-31 ) and cost of metal gaskets (col. 2, lines 23-31). '319's invention includes an elastomeric gasket (col. 2, lines 49-50) for the door gaskets. '319 is silent on the details of the Knudsen cell.

'319 does not teach the other limitations of:

Claim 34: a fourth gasket placed between the process chamber and the shutter mechanism; and a fifth gasket placed between the shutter mechanism and the deposition source chamber, wherein: the first gasket and the fifth gasket are formed by a perfluoroelastomer, and the second, third, and fourth gaskets

are formed by metal or ceramic, and the deposition source container has an inner surface having center line average roughness not greater than 100 nm.

'302 is an analogous art in the field of sealing material for a vacuum system, particularly in providing superior sealing performance (abstract). '302 recognizes the need to lower organic emission of volatile component in the next generation of fabrication factory ([0003]) and provides organic perfluoroelastomer ([0007]) with small emission of organic matter ([0044]).

'986 is an analogous art in the field of semiconductor processing, particularly in deposition source (title). '986 teaches a gate valve/shutter mechanism (#3, [0172]) with a gasket (#6, Fig. 3A for example) between the process chamber (see Fig. 1, for example) and the shutter mechanism, and a gasket (#4) between the shutter mechanism and the crucible/deposition source chamber (#18, [0174]).

At the time the invention was made, it would have been obvious to a person having ordinary skill in the art to have combined '986 and '302 with '319. Specifically, to have replaced the Knudsen cells of '319 with crucibles/deposition sources (#18) along with the gate valve/shutter mechanism and seals on both sides of the shutter mechanism, as taught by '986, for the purpose of suitability. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. MPEP 2144.07. Furthermore, to have adopted the perfluoroelastomer of '302 as the elastomeric

material for the gaskets in the apparatus in Fig. 4 of '319, for the purpose of reducing emission of organic matter, as taught by '302 ([0004]), and applied perfluoroelastomer (from '302) to the sample entry ports but all-metal seals at other ports (col. 1, lines 58-62), as taught by '319 (col. 2, lines 9-10) and for the cost of metal gaskets (col. 2, lines 23-31). Notes that the first gasket and the fifth gasket can be considered as sample entry port (for wafer and for deposition material, respectively), or as depending on the frequency of the opening/closing door ('319, col. 2, lines 30-31), depending on the mode of operation of the apparatus.

'319, '302, and '986 are all silent on the details of the evaporation source container, therefore, does not teach the limitations of:

Claim 34: the deposition source container has an inner surface having center line average roughness not greater than 100 nm.

Claim 37: the center line average roughness is not greater than 10 nm.

'047 is an analogous art in the field of film forming apparatus (title), particularly for vaporization source ([0026]). '047 teaches the material used in treatment chamber to have an average surface roughness of 5 nm or less, for the purpose of reducing surface area due to the adsorptivity of an impurity ([0134]).

At the time the invention was made, it would have been obvious to a person having ordinary skill in the art to have combined '047, with '319, '302, and

'986. Specifically, to have used a smooth surface Knudsen cells, part of the treatment chamber, as taught by '047, in the combined apparatus of '319, '302, and '986, for the purpose of reducing surface area from impurity, as taught by '319 ([0134]).

'319 further teaches the limitations of:

Claim 35: The vapor deposition apparatus according to claim 34, further comprising a sixth gasket (#92, O-ring of gate valve for #52, last line of col. 7 to first line of col. 8, see Fig. 6 or 7) placed between the substrate introducing chamber and a second primary pump (#46, col. 8, line 1), the sixth gasket being formed by metal or ceramic (col. 1, lines 58-62).

Claim 38: The vapor deposition apparatus according to claim 34, wherein the second, third, and fourth gaskets are formed by copper (col. 1, line 61).

4. **Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over '319, '302, and '986, further in view of Fareed et al. (US 20020058107, hereafter '107).**

'319, '302, and '698, together, teach all limitations of claim 34, as discussed above. '698 is silent on the details of crucible (#18).

'319, '302, and '698, together, do not teach the limitations of:

Claim 36: The vapor deposition apparatus according to claim 34, wherein the deposition source container is made of alumina.



'107 is an analogous art in the field of CVD ([0029]), particularly in using a crucible ([0144]). '107 teaches an alumina crucible (#120, Fig. 5g, [0164], lines 13-16 ).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have combined '107 with '319, '302, and '986. Specifically, to have adopted an alumina crucible, as taught by '107, for the motivation of suitability. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. MPEP 2144.07.

**5. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over '319, '302, and '986, further in view of Hisaharu et al. (English translation of JP06- 107803, hereafter '803).**

'319, '302, and '698, together, teach all limitations of claim 34, as discussed above. '302 further teaches the treatment of sealant in acetone.

'319, '302, and '698, together, do not teach the limitations of:

Claim 39: The vapor deposition apparatus according to claim 34, wherein the first gasket has been subjected to a process of contacting it with water at 80°C or more.

'803 is an analogous art in the field of sealing material, particularly in solving the gas emission of fluororubber (abstract, lines 1-2). '803 teaches

treatment of crosslinked rubber, including perfluoroelastomer ([0017] 2nd last two lines) in contact with a solvent, including water ([0037], line 1), at 95-100° C to lower gas emission (abstract, lines 8- 10).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have combined '803 with '319, '302, and '986. Specifically, to have treated the gasket made of perfluoroelastomer of '302 in water at 95-100° C according to '803 for the purpose of lower gas emission, with a reasonable expectation of success.

**6. Claims 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over '319, '302, and '986, further in view of Ji et al. (US 20030098419, hereafter '419).**

'319, '302, and '698, together, teach all limitations of claim 34, as discussed above.

'319, '302, and '698, together, do not teach the limitations of:

Claim 40: The vapor deposition apparatus according to claim 34, further comprising: a first secondary pump connected to an exhaust side of the first primary pump; and a gas introducing portion for introducing an inert gas between the first primary pump and the first secondary pump.

Claim 41: The vapor deposition apparatus according to claim 35, further comprising: a second secondary pump connected to an exhaust side of the second primary pump; and a gas introducing portion for introducing an inert gas

between the second primary pump and the second secondary pump.

'419 is an analogous art in the field of CVD (abstract). '419 teaches semiconductor fabrication often use multi-stage dry pumps with interstage nitrogen purge gas injection ([0073]).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have combined '419 with '319, '302, and '986. Specifically, to have replaced the pump system of '319 with multistage dry pumps with '319, '302, and '986, for the purpose/motivation of attenuate sudden change in reactor gases, as taught by '419 ([0073]).

### ***Response to Arguments***

Applicant's arguments filed on 09/02/2009 have been fully considered but they are not convincing in light of the new ground of rejection above.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is

filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEATH T. CHEN whose telephone number is (571)270-1870. The examiner can normally be reached on 6:30AM-3 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. T. C./  
Examiner, Art Unit 1792  
/Ram N Kackar/  
Primary Examiner, Art Unit 1792